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- (b) Hauling Equipment
- (c) Laydown Equipment
 - 1. Paver
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 - 3. Other Mechanical Devices
- (d) Compaction Equipment
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 - 2. Three Wheel Roller
 - 3. Pneumatic Tire Roller
 - 4. Vibratory Roller
 - 5. Trench Roller
 - 6. Specialty Roller/Compactor
- (e) Miscellaneous Equipment
 - 1. Aggregate Spreader
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 - 2. Straightedge 4.9 m (16 ft)
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- 502.11 Weather Limitations
- 502.12 Placing Concrete
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- 5. Timbers, Round
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 - 1. Species and Grades
 - 2. Department Grade GRP
 - a. Splits
 - b. Checks
 - c. Shakes
 - d. Stains
 - e. Slope of Grain
 - f. Wane
 - g. Knots
 - 3. Department Grade GRB
 - a. Splits
 - b. Checks
 - c. Shakes
 - d. Stains
 - e. Wane f. Knots
 - 4. General Requirements
 - a. Decay
 - b. Unsound Wood
 - c. Crook or Bow
 - d. Dimensional Tolerances
 - 5. Pressure Treating Posts and Blocks
 - a. Machining
 - b. Blank
 - c. Inspection Before Treatment
 - d. Test for Moisture Content
 - e. Preservative Treatment
 - f. Material for Preservative Treatments
 - g. Treatment Methods
 - h. Sorting and Spacing
 - i. Conditioning
 - j. Treatment
 - k. Inspection During Treatment
 - 1. Retentions
 - m. Penetration
 - n. Inspection After Treatment
 - o. Branding
 - p. Conformance
 - q. Records
 - r. Independent Inspections

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- 6. Field Treatment of Posts and Blocks
- 7. Rejection for Degrade After Treatment
- (g) Preservatives
 - 1. Waterborne Preservatives

SECTION 912 - CONCRETE CURING MATERIALS AND ADMIXTURES

- 912.01 Curing Materials
 - (a) Burlap Cloth made from Jute or Kenaf
 - (b) Waterproof Paper Blankets
 - (c) White Polyethylene Sheeting, Film
 - (d) White Burlap Polyethylene Sheet
 - (e) Liquid Membrane Forming Compounds
 - (f) Polyethylene Film.
- 912.02 Curing-Sealing Materials
- 912.03 Admixtures for Use in Concrete
 - (a) Air Entraining Admixtures
 - (b) Chemical Admixtures for Concrete
 - 1. Type A
 - 2. Type B
 - 3. Type C
 - 4. Type D
 - 5. Type E
 - 6. Type F
 - 7. Type G
 - 8. High Range Water Reducing and High Range Water Reducing and Retarding Admixture Systems
 - (c) Test Report
- 912.04 Latex Modifiers

SECTION 913 - MISCELLANEOUS

- 913.01 Water
- 913.02 Calcium Chloride
- 913.03 Sodium Chloride
- 913.04 Lime
 - (a) Hydrated Lime for Masonry
 - (b) Lime for Soil Modification
 - 1. Hydrated Lime and Quicklime
 - 2. Lime By-Products
- 913.05 Precast Concrete Curbing
- 913.06 Precast Concrete Units Not Otherwise Covered
- 913.07 Flexible Delineator Posts
- 913.07.1 Tubular Marker
- 913.08 Delineators
 - (a) Acrylic Plastic Delineators
 - (b) Reflective Sheeting Delineators
 - (c) Barrier Delineators
 - (d) Temporary Barrier Delineator
- 913.09 Glass Beads
- 913.10 Traffic Signs
 - (a) Backing Material
 - 1. Sheet Signs
 - 2. Panel Signs
 - 3. Demountable Letters, Numbers, and Symbols
 - (b) Sheeting Material
 - 1. Reflective Sheeting
 - 2. Nonreflective Sheeting
 - 3. Transparent Sheeting

- (c) Letters, Numerals, Symbols, and Accessories
- (d) Fasteners
 - 1. Sheet Signs
 - 2. Panel Signs and Temporary Panel Signs
 - 3. Aluminum Rivets
- (e) Basis for Use
- 913.11 Highway Illumination Materials
 - (a) Lighting Standards and Mast Arms, under 80 feet (24.4 m)
 - 1. General Requirements
 - 2. Aluminum Lighting Standards
 - a. Round Seamless
 - b. Single Longitudinal Welded
 - 3. Stainless Steel Lighting Standards
 - 4. Galvanized Steel Lighting Standards
 - 5. Wood Pole Lighting Standards
 - 6. Frangible Breakaway Bases
 - a. Cast Aluminum Transformer Base
 - b. Breakaway Coupling
 - 7. Anchor Bolts
 - (b) High Mast Standards of 24.5 m (80 ft) and Over
 - 1. High Mast Poles
 - 2. Welding
 - 3. Handholes
 - 4. Luminaire Ring Assembly
 - 5. Head Frame Assembly
 - 6. Winch Assembly
 - 7. External Drive System
 - 8. Cable Terminator
 - 9. Lightning Rod Assembly and Grounding System
 - 10. Anchor Bolts
 - (c) Wire and Cable
 - 1. Polyethylene Conduit
 - 2. Conductors in Cable-Duct
 - 3. Lighting Standard Circuit Wiring
 - 4. Sign and Underpass Wiring
 - 5. Aerial Cable
 - 6. High Mast Tower Luminaire Ring Conductors
 - 7. Power Cable-High Mast Poles
 - 8. Electrical Connectors
 - (d) Luminaires
 - 1. General Requirements
 - 2. Roadway Lighting Luminaires
 - 3. Sign Luminaires
 - 4. Underpass Luminaires
 - 5. High Mast Luminaires
 - (e) Circuit Breakers and Enclosure
 - 1. Circuit Breakers for Type II Service Point
 - 2. Circuit Breakers for Sign and Underpass Circuits
 - 3. Circuit Breakers for High Mast Poles
 - 4. E-Series Magnetic Circuit Breakers
 - (f) Multiple Relay Switches with Photocell Receptacles
 - (g) Shop Drawings
 - (h) Materials Certification

- 913.12 Construction Warning Lights
 - (a) Flash Requirements
 - 1. Flash Rate
 - 2. On-Time
 - a. Type A
 - b. Type B
 - (b) Optical Requirements
 - 1. Effective Intensity
 - 2. Lens Illumination
 - 3. Reflex-Reflective Performance
 - 4. Testing Procedure
 - (c) Lens Requirements
 - 1. Size of Lens
 - 2. Directional Lenses
 - 3. Lens Chromaticity
 - 4. Lens Luminous Transmittance
 - 5. Lens Material
 - (d) Head and Case
 - 1. Swivel Head
 - 2. Case
 - (e) Photoelectric Controls
- 913.13 Flashing Arrow Sign
 - (a) Solar Powered
 - (b) Diesel Powered
 - (c) AC Powered
- 913.13.1 Temporary Worksite Speed Limit Sign Assembly
- 913.14 Pavement Marking Material
 - (a) Traffic Paint
 - (b) Durable Marking Material
 - 1. Thermoplastic
 - 2. Preformed Plastic
 - a. Material Requirements
 - (1) Tensile Strength
 - (2) Adhesive Stability Test
 - (3) Adhesive Shear Strength
 - (4) Bend Test
 - b. Packaging
 - c. Basis For Use
 - 3. 100 Percent Solids Epoxy
 - a. Material Requirements
 - (1) Glass Beads
 - (2) Abrasion Resistance
 - (3) Hardness
 - (4) Tensile Strength
 - (5) Compressive Strength
 - (6) Weather Resistance
 - (7) Laboratory Drying Time
 - (8) Viscosity
 - b. Materials Preparation
 - c. Packaging and Storage
 - d. Basis For Use
 - (c) Temporary Pavement Marking Tape

- (d) Raised Pavement Marker
 - 1. Snowplowable Raised Pavement Marker
 - a. Prismatic Reflector
 - (1) Optical Performance
 - (2) Seal Test
 - (3) Heat Resistance Test
 - (4) Strength Test
 - (5) Impact Test
 - (6) Temperature Cycling Test
 - (7) Adhesive Tensile Strength Test
 - (8) Basis for Use
 - b. Cast Metal Base
 - (1) Epoxy Adhesive
 - (2) Basis for Use
 - c. Precast Cement Concrete Base
 - (1) Adhesive for Precast Concrete Base
 - (2) Packaging
 - (3) Basis for Use
 - 2. Temporary Raised Pavement Marker
 - a. Optical Requirements
 - b. Strength Requirements
 - c. Adhesive
 - d. Acceptance Evaluation
- 913.15 Traffic Signal Materials and Equipment
 - (a) Traffic Signal Controller and Cabinet
 - 1. Model Approval
 - 2. Controllers or Control Units Furnished and Installed by the Contractor
 - 3. Blank
 - 4. Bench Testing
 - 5. Pretimed Solid State Digital Controller
 - a. General
 - b. Controller Requirements
 - c. Spare Modules
 - d. Controller Enclosure
 - e. Power Requirements
 - f. Certification of Traffic Control Units
 - g. Warranty
 - 6. Traffic Actuated Solid State Digital Controller
 - a. General
 - b. Controller Requirements
 - c. Spare Modules
 - d. Controller Enclosure
 - e. Power Requirements
 - f. Certification of Traffic Control Units
 - (1) Certification of a Production Run Model
 - (2) Certification of Environmental Testing
 - g. Warranty
 - 7. Cabinet Requirements for Traffic Signal Controllers
 - a. General
 - b. G Cabinet
 - (1) Cast Aluminum Pedestal Base
 - (2) Pedestal Pole
 - (3) Pole Cap
 - c. M Cabinet
 - d. P-1 Cabinet

- 8. Two Circuit Alternating Flasher
 - a. General
 - b. Cabinet Requirements
- (b) Interconnection Equipment.
 - 1. Hardwire Interconnection
 - a. Electro-Mechanical Dial Coordination Unit
 - (1) General
 - (2) Additional Requirements for Master Locations
 - (3) Additional Requirements for Secondary Locations
- (c) Blank
- (d) Signal Head Components
 - 1. Vehicle Signal Face
 - a. General
 - b. Housing, Door, and Visor
 - c. Lens
 - d. Reflector Assembly
 - e. Lamp Receptacle and Wiring
 - f. Section Coupling
 - g. Terminal Block
 - h. Material Requirements
 - (1) Polycarbonate Signal Head
 - (2) Die-Cast Aluminum Signal Head
 - i. Certification
 - 2. Pedestrian Signal Head
 - a. Housing, Door, and Visor
 - b. Optical Unit
 - c. Lens
 - d. Message
 - e. Reflector Assembly
 - f. Light Distribution
 - g. Electrical
 - 3. Disconnect Hanger Junction Box
 - 4. Signal Bulbs
 - 5. Free Swinging Signal Support Assemblies
 - 6. Mid-Mast Arm Mount Signal Bracket
 - 7. Pedestal Mounted Control Cabinets or Pedestrian Signal Heads
- (e) Signal Support
 - 1. Steel Strain Pole
 - a. Maximum Load 35.6 kN (8000 lbs)
 - 2. Wood Strain Pole
 - 3. Signal Cantilever Structures
 - a. General
 - b. Signal Support
 - c. Combination Signal-Luminaire Support
 - d. Pole Requirements
 - (1) General
 - (2) Deflection
 - (3) Materials
 - (4) Hardware
 - (5) Anchor Base
 - e. Arm Requirements
 - (1) Signal Cantilever Arm
 - (2) Luminaire Mast Arm for Combination Support
 - (3) Materials

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- f. Anchor Bolts
- g. Finish
- h. Certification
- i. Shop Drawings
- 4. Downguys, Anchors, Rods, and Guards
- (f) Messenger Cable
 - 1. Messenger Cable
 - 2. Span, Catenary, and Downguy Cable
 - 3. Tether and Support Cable
 - 4. Cable Hardware
 - a. Messenger Hangers
 - b. Cable Ring
 - c. Clamps
 - d. Servi-Sleeves
 - e. Straight Eye-Bolts
 - f. Hub-Eyes
 - 5. Signal Cable
 - a. Hook-up Wire
 - b. Signal Control Cable
 - c. Integral Messenger Interconnect Cable
 - d. 6 Pair/19 Telemetry Cable
 - e. Fiber Optic Interconnect Cable
 - f. Service Cable
 - g. Detection Wire and Sealant
 - (1) Loop Detector Lead-in Cable
 - (2) Roadway Loop Wire
 - (3) Sealant
 - h. Ground Wire
 - i. Splicing Kit
- (g) Ground Rod and Connections
- (h) Castings for Handholes
- (i) Entrance Switch
- (j) Conduit and Fittings
 - 1. Steel Conduit
 - 2. Polyvinyl Chloride Conduit
- (k) Detector Housing
- (1) Certification
- 913.16 Fabric for Waterproofing
- 913.17 Packaged, Dry, Combined Materials for Mortar and Concrete
- 913.18 Geotextile for Use Under Riprap
- 913.19 Geotextile for Use with Underdrains
- 913.20 Geotextile for Silt Fence
- 913.21 Geogrid
 - (a) Type I
 - (b) Type II

SECTION 914 - ROADSIDE DEVELOPMENT MATERIALS

- 914.01 Special Topsoil for Roadside Development
- 914.02 Temporary Seed
- 914.03 Fertilizer
- 914.04 Grass and Legume Seed

Section Title

- 914.05 Mulch
 - (a) Mulch for Seeding
 - 1. Excelsior Mulch
 - 2. Wood Cellulose Fiber
 - 3. Excelsior Blanket
 - 4. Paper Mat
 - 5. Straw Mat
 - (b) Mulch for Plants
- 914.06 Leguminous Inoculants
- 914.07 Sod
- 914.08 Plant Materials
 - (a) Quality of Plant Materials
 - (b) Plant Names
 - (c) Substitutions
 - (d) Grading Standards
 - (e) Nursery Inspection and Plant Quarantine
 - (f) Balled and Burlapped Plants
 - (g) Container Grown Plants
 - (h) Bare Rooted Plants
 - (i) Collected Plants
 - (j) Forms, Shapes, and Condition of Plants
 - (k) Inspection
 - (1) Shipment
 - (m) Certification
- 914.09 Miscellaneous Material
 - (a) Water
 - (b) Stakes for Bracing and Anchoring
 - (c) Tree Wound Dressing
 - (d) Porous Material
 - (e) Pipe
 - (f) Staples
 - (g) Plastic Net

SECTION 915 - BRIDGE PILES AND BEARINGS

- 915.01 Steel Shell Encased Concrete Piles and Epoxy Coated Steel Shell Encased Reinforced Concrete Piles
 - (a) General Requirements
 - (b) Fluted Steel Pile Shells
 - (c) Rounded Steel Pipe Shells
 - (d) Epoxy Coating for Piles
 - 1. Prequalification of Organic Coatings for Steel Piles
 - a. Product Data Sheet
 - b. Fingerprint
 - c. Materials Safety Data Sheets
 - d. Laboratory Report
 - (1) Tensile Strength and Elongation
 - (2) Impact Resistance
 - (3) Abrasion Resistance
 - (4) Salt Fog
 - 2. Application
 - a. Surface Preparation
 - b. Coating Application
 - (1) Thickness
 - (2) Cure
 - (3) Continuity of Coating
 - 3. Certification
- 915.02 Steel H Piles and Epoxy Coated Steel H Piles
- 915.03 Wood Piles

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- 915.04 Elastomeric Bearings
 - (a) Description
 - (b) Materials
 - (c) Manufacturing Requirements
 - (d) Appearance and Dimensions
 - (e) Quality Assurance
 - (f) Certification

SECTION 916 - MATERIALS CERTIFICATIONS

- 916.01 General
- 916.02 Types of Certifications
 - (a) Type A
 - (b) Type B
 - (c) Type C
 - (d) Type D
 - (e) Other Types
 - (f) Requirements for Small Quantities of Materials
 - (g) Buy American Requirement
- 916.03 Sample Forms
 - (a) For Buy American Requirement
 - (b) Sample Type A Certification Form
 - (c) Sample Type B Certification Form
 - (d) Sample Type C Certification Form
 - (e) Sample Type D Certification Form
 - (f) Sample Asbestos Exclusion Letter

SECTION 917 - QUALITY ASSURANCE AGGREGATE CERTIFICATION

- 917.01 General Requirements
- 917.02 Quality Control Plan
- 917.03 Source Approval Requirements
 - (a) Step 1
 - (b) Step 2
 - (c) Step 3
- 917.04 Removal from Certified Producer Status
- 917.05 Appeals